

BEST AVAILABLE COPY REMARKS

Applicant has amended claims 5 and 6 to overcome the rejection under 35 USC § 112 and added new claims 21-23 to better define the invention. A check is enclosed for the additional claims. Applicant respectfully traverses the rejection of the claims over the cited references and respectfully requests reconsideration.

A key difference between what is claimed in this application and what is shown in the references is the requirement of infusing a woven preform with an adhesive. In the prior art, woven preforms were used at joints between components, but the preforms were infused with a resin. Since resin does not bond sufficiently well with components, a thin sheet or film of adhesive was placed between the preform and the components. Adhesives differs from resins, and in the prior art the woven preforms were not infused with an adhesive, rather they were infused with resin because of the greater tensile strength of resin. This requires the extra cost and step of applying a film of adhesive between the resin-infused preform and the component, however.

With this invention, Applicant discloses that even though adhesive lacks the same tensile strength as resin, its toughness makes it adequate for use with a preform without the need to also include resin. This avoids the need for a separate film of adhesive between the preform and the component.

The specification defines the word "adhesive" as opposed to "laminating resins" beginning at page 5, line 10 and ending at page 6, line 17. There are a number of measurable differences between adhesives and resins. Adhesives have a greater peel strength than resins, specifically greater than 15 lbs. per linear inch, as defined herein, wherein laminating resins have a peel strength less than that. Adhesives have tensile strengths less than 6500 psi, as defined herein. Laminating resins, on the other hand, have tensile strengths greater than 7500 lbs. per

square inch. Thus, the term “adhesives” as is used in this application means a material with tensile strengths less than 6500 psi and a peel strength greater than 15 lbs. per linear inch.

Adhesives that meet this definition are known in the prior art, but it is not been known to infuse a woven preform with such an adhesive. Wanthal, et al. discloses the use of woven preforms that are infused with resin, not adhesive. Note for example, the discussion between Figures 14 and 15 of Wanthal. The reference states that the preforms are resin transfer molded. The reference also says: “The cobonded specimens contained a layer of adhesive between the spar cap and skin, which was cured simultaneously with the cap and skin.” It is thus clear that the preform was infused with resin, and an adhesive film was applied between the preform and the component to which the preform was being bonded in order to provide an adequate bond of the preform to the component.

Also, in the discussion about Figure 18 of Wanthal, it states that the 3D textile was resin infused. It then goes on to state that after the assembly was cured, a precured laminate was paste-bonded in the pi clevis using EA9346.5 adhesive. The adhesive bonds the resin-infused preform to the laminate. There is no suggestion whatsoever that the adhesive would be infused into the 3D textile.

Each of the independent claims requires infusing the preform with an adhesive. The word “infusing” is used in its normal sense, that is either to introduce the textile into a bath of the adhesive, or pour adhesive over the textile. Placing a layer of adhesive between the preform and the object to which it is being bonded does not constitute infusing the preform with an adhesive. Applicant thus submits that Wanthal, et al. does not disclose the invention under 35 USC § 102.

Claim 2 was rejected over Wanthal, et al. in view of Hartman. Hartman discloses a polyethylene composition that causes it to adhere directly to metallic substrates. All of the

examples disclose an oxidized polyethylene and polyethylene blend being formed into sheets or film and bonded to substrates. Column 2, lines 50-55 states that the blend can be bonded to a variety of substrates, including metals, glass, plastics, wood, paper and the like. It states that the blend is particularly valuable as coatings for steel, copper and aluminum. It also says that inks and paints adhere well to films and sheets of the blends. However, there is no suggestion whatsoever that this blend would be useful to infuse within a woven preform to bond objects together. Applicant does not purport to have invented an adhesive, rather has invented a new use for adhesives, which is infusing it within a woven preform for bonding objects when cured. Combining Wanthal with Hartman would not teach one to infuse the woven preforms of Wanthal with an adhesive.

Claim 6 and other claims were rejected over Wanthal in view of Bersuch, et al. Bersuch does not disclose infusing a preform with an adhesive. Bersuch discloses a woven preform and mentions that it cures, but does not disclose any adhesive within the preform.

Claims 17-20 were rejected over Wanthal in view of Sheahen, et al. Sheahen discloses the use of preforms but does not disclose infusing the preform with an adhesive. Page 7, second column, second paragraph from the end, mentions that the preforms were impregnated through a resin film infusion process. The first column of the same page mentions adhesive, however these adhesives were films that bonded the resin-infused preforms to the substrates. There is no mention that the adhesives would be infused into the preforms.

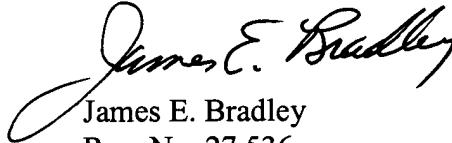
New claim 21 also requires infusing a preform of woven fabric with an adhesive. It specifically states that the adhesive has a tensile strength less than 6500 lbs. per square inch and a peel strength greater than 15 lbs. per linear inch. None of the references suggest infusing a

BEST AVAILABLE COPY

woven fabric preform with an adhesive so defined. Claims 22 and 23 depend from claim 1, thus should also be allowed.

It is respectfully submitted that the claims are now in condition for allowance and favorable action is respectfully requested.

Respectfully submitted,



James E. Bradley
Reg. No. 27,536
Attorney for Applicant

Date: Feb 28, 2003
BRACEWELL & PATTERSON, L.L.P.
P. O. Box 61389
Houston, Texas 77208-1389
Tel.: (713) 221-3301
Fax: (713) 222-3287